Periscope.

a.—ANATOMY AND PHYSIOLOGY OF THE NERVOUS SYSTEM.

The Nerve Cells in the Cerebro-Spinal Ganglia and Peripheral Cranial Ganglia have been very exhaustively studied by G. Retzius in a recent article in the *Archiv f. Anatomie* (1880, p. 396). He examined a number of species throughout the entire vertebrate series. While there is nothing startlingly new in his results, the thoroughness of the author renders his descriptions authoritative, and does away with much of the obscurity hitherto prevailing in this subject. He finds that in the spinal ganglia divisions of myelated nerve fibres are a very common occurrence. In batrachia, birds, and mammals the nerve cells of these ganglia present only one process, and this filament, after receiving an investing sheath of myeline and assuming the appearance of an ordinary myelated nerve fibre, joins, probably in all cases, another nerve fibre at a point of constriction forming the T-shaped junction of Ranvier. But this apparent junction is probably really to be considered a division of the myelated cell-process. Whether one of the resulting branches runs peripherally and the other toward the spinal cord, cannot be decided with present means. It can, likewise, not be decided whether all cell-processes undergo this division.

The jugular and cervical ganglia of the vagus, the jugular and petrosal ganglia of the glosso-pharyngeal, the geniculate ganglia of the facial, and the semilunar ganglia of the trigeminus must rank as true cerebro-spinal ganglia as judged by their structure. The ganglion of the auditory nerve can also be included in this category, though presenting some peculiarities. In the cerebro-spinal ganglia even the smallest nerve cells are seen to have processes, which assume the appearance of non-myelated fibres, and are sometimes found to divide. Whether these processes ultimately obtain a sheath of myeline could not be decided. The occurrence of apolar cells is highly improbable. Of the other cranial ganglia, the otic, spheno-palatine, and submaxillary ganglia must be considered as belonging to the sympathetic system, by reason of their histological structure. As regards the ciliary ganglia the author is not quite decided. His histological researches compel him to regard it as a sympathetic ganglion, while Schwalbe's investigations in comparative anatomy demonstrate it as the true ganglion of the motor oculi.

THE DILATOR NERVES OF THE PUPIL.—M. François-Franck publishes in the laboratory reports of Marey, iv, 1879–79, the following interesting researches, of which we find an abstract in the *Centralblatt f. d. Med. Wiss.*, No. 15, 1881.

The movements of the iris, as well as of all other delicate tissues, are under the influence, at least to some extent, of the blood-vessels, but not entirely so. The dilator nerves of the iris separate themselves from the vaso-motor nerves at two points—one right over the superior cervical ganglion, the other at the level of the ciliary nerves. Franck found that above the superior cervical ganglion two fibres enter the skull through the carotid canal. One of these dilates the pupil, when irritated, without influencing the vessels. On testing the nerves which pass from the ophthalmic (ciliary) ganglion along the optic nerve, two sets of fibres are likewise found, mainly contractors, but also some dilators. It can likewise be shown that irritation of the sympathetic nerve produces dilatation of the pupil much sooner than vascular contraction, and that the former result does not last as long as the latter.

Division of the fifth, fourth, and third dorsal communicating rami (of the sympathetic) causes a slight momentary dilatation of the pupil. The same result is obtained by dividing the first and second dorsal rami, as well as the branches passing from the eighth, seventh, sixth, and fifth cervical roots to the first thoracic ganglion. This ganglion, therefore, receives dilator fibres coming from the cord in an ascending as well as in a descending direction. They ascend thence through the anterior branch of the loop of Vieussens to the inferior cervical ganglion. The upper thoracic ganglion serves as a tonic centre for the dilator nerves of the pupil.

The dilator fibres thence ascend with the cervical sympathetic